



DEPARTMENT OF TRANSPORTATION
MATERIALS TRANSPORTATION BUREAU
WASHINGTON, D.C. 20590

31180

[Docket No. HM-143; Amdt. Nos. 172-48,
173-124, 174-34, 175-8, 176-7, 177-45]

49 CFR Parts 172, 173, 174, 175, 176,
177

Blasting Agents

AGENCY: Materials Transportation
Bureau (MTB), Research and Special
Programs Administration, DOT.

ACTION: Revision of previous
amendment.

SUMMARY: This revision of the final rule for Blasting Agents as published on December 11, 1978, in the Federal Register (43 FR 57898) makes several changes in the requirements for materials known as ammonium nitrate-fuel oil mixtures. Among these are: (1) A provision that testing may be done by the manufacturer; (2) only the blasting cap sensitivity test need be passed; (3) written reports of the tests must be submitted to the Associate Director for Operations and Enforcement; and (4) the required usage of the proper shipping name "ammonium nitrate-fuel oil mixtures" for such materials.

The notification and approval requirements have also been consolidated into § 173.114a rather than being referenced in § 173.86. A provision which allows materials presently properly described, offered, and transported as nitrocarbonitrate to continue to be shipped under that description until December 31, 1980, is included in this revision. Also, minor changes in other parts and sections of the final rule have been made to accommodate the addition of the "ammonium nitrate-fuel oil mixture" entry.

EFFECTIVE DATE: August 15, 1979; however, shipments may be prepared, offered for transportation, and transported in accordance with these amendments beginning May 31, 1979.

FOR FURTHER INFORMATION CONTACT: Charles W. Schultz, Technical Division, Office of Hazardous Materials Regulation, 2100 Second Street, SW., Washington, D.C. 20590, 202/755-4906.

SUPPLEMENTARY INFORMATION: On December 11, 1978, the MTB published a final rule under Docket HM-143 in the Federal Register (43 FR 57898), establishing the new shipping descriptions of Blasting Agent, n.o.s., Ammonium nitrate-fuel oil mixture, and

a new hazard class, Blasting Agents.

Since this publication, the MTB has received three petitions for reconsideration in accordance with the provisions of 49 CFR 106.35.

One petitioner stated that the amendment creates a new hazard class "... which is inconsistent with all other regulatory schemes all over the world."; that the basis of this new hazard class is the end use of the materials rather than their intrinsic characteristics; that no need or justifiable evidence was presented by any participant in the proceedings to warrant the establishment of the new class; that establishment of the new class makes all training material somewhat obsolete; and that there are twelve other alleged errors in the Docket.

The MTB is not aware of any governmental regulatory class scheme, except those of the United States and Canada, which officially recognizes the term "nitrocarbonitrate." The "Transport of Dangerous Goods" (ST/SG/AC.10/1/Rev. 1, Page 153) as published by the United Nations does not include the term "nitrocarbonitrate" in its index and further implies that this term is used only in North America. The materials called nitrocarbonitrates are included in Explosives, Blasting, Type B. Also, nitrocarbonitrate is not a recognized shipping name under the Inter-governmental Consultative Organization (IMCO) regulations. Because of this, the MTB believes that the term "blasting agent" is more in line with international regulatory schemes.

As to the statement that the new hazard class is based on end use rather than intrinsic characteristics, it is the MTB's opinion that the phrase "... a material designed for blasting ..." constitutes only a limited part of the definition of a blasting agent and is included only to aid in the identification of the type of materials being addressed by these regulations. The fundamental part of the definition is the test criteria and these tests do evaluate the intrinsic characteristics, kind, and degree of hazard of these materials. The statement that there was no need or justification for establishing a new class of materials was addressed in the preamble of Docket HM-143 (43 FR 57898) in the last paragraph under Section 172.101. The MTB's opinion has not changed since this publication.

A petitioner's statement that the new

class makes training materials somewhat obsolete may be addressed to any new rulemaking. It is the MTB's opinion that training materials must reflect the regulations and be based on the regulations, rather than regulations being based on training materials.

Another petitioner stated that the cost of compliance with the required tests would place an extremely high and unjustifiable burden on the industry. The petitioner also asserted that there existed large inventories of materials prepared in compliance with the requirements for nitrocarbonitrates, that supplies of preprinted packaging existed, and that compliance with the August 15, 1979, effective date would not be practicable since a longer period of time is necessary to deplete existing stocks of completed packagings and packaging supplies. The MTB has reviewed the test requirements for blasting agents and believes that such tests are necessary. However, for products consisting of only "prilled ammonium nitrate and fuel oil," the MTB has determined that only the blasting cap sensitivity test need be passed. Based on figures obtained from industry, this will eliminate the requirement to perform approximately 10,000 tests for this type of blasting agent with a significant cost savings to industry. Also included in this amendment is an allowance for materials presently described, offered and transported as nitrocarbonitrate to continue to be shipped in accordance with the regulations in effect on August 14, 1979, until December 31, 1980.

Another petitioner requested that manufacturers of blasting agents be allowed to perform the required tests, that the classing of blasting agents be done by DOT, and that the effective date be extended to August 15, 1981. Upon further consideration, it is the MTB's opinion that materials which contain only prilled ammonium nitrate and fuel oil may be tested by individual manufacturers with the results being forwarded to the MTB. According to industry figures, these materials comprise about 85% of materials included in the blasting agent classification. Testing of the remaining materials must be conducted by one of the designated agencies, with approvals for the class and packaging being issued by the Associate Director for Operations and Enforcement of the MTB. The MTB believes that extension of the effective

date is not required in light of the allowance for materials presently shipped as nitrocarbonate.

The primary drafters of this document are Charles W. Schultz, Technical Division, Office of Hazardous Materials Regulation, and Delmer F. Billings, Standards Division, Office of Hazardous Materials Regulation.

For clarity and convenience, the final rule on blasting Agents as published in the Federal Register (43 FR 57898) on December 11, 1978 is repeated here in its entirety with all modifications.

In consideration of the foregoing, 49 CFR Parts 172, 173, 174, 175, 176 and 177 are amended as follows:

PART 172—HAZARDOUS MATERIALS TABLE AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS

1. § 172.101 is amended by deleting the entries "nitro carbo nitrate," and "ammonium nitrate fuel oil mixtures . . ." and adding the following entries in alphabetical order to read as follows:

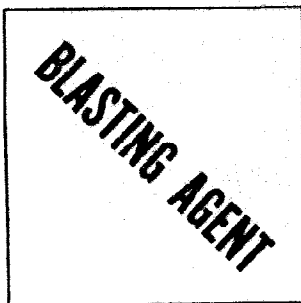
§ 172.101 Hazardous materials table.

(1) A/ N/ W	(2) Hazardous materials description and proper shipping names	(3) Hazard class	(4) Label(s) required (if not excepted)	(5) Packing		(6) Maximum net quantity in one package		(7) Water Shipments		
				(a) Exceptions	(b) Specific Requirements	(a) Passenger carrying aircraft or railcar	(b) Cargo only aircraft	(a) Cargo Vessel	(b) Passenger vessel	(c) Other Requirements
(Add)										
Ammonium nitrate - fuel oil mixtures (Containing only prilled ammonium nitrate and fuel oil). See Blasting agent, n.o.s.										
Ammonium nitrate - fuel oil mixtures See High explosive										
Blasting Agent, n.o.s.		Blasting agent	Blasting agent	None	173.114a	Forbidden	100 lb	1, 2	1, 2	
(Delete)										
Ammonium nitrate - fuel oil mixture. See Nitro carbonate or Explosive, class A or B										
Nitro carbo nitrate		Oxidizer	Oxidizer	173.153	173.182	2 pounds	100 pounds	1, 2	1, 2	

2. In § 172.411 the Heading is revised and new paragraphs (c) and (d) are added to read as follows:

§ 172.411 EXPLOSIVE A, EXPLOSIVE B, EXPLOSIVE C, and BLASTING AGENTS labels.

(c) Except for size and color, the BLASTING AGENT label must be as follows:



(d) In addition to complying with § 172.407, the BLASTING AGENT label must be orange. The printing must be black.

§ 172.504 [Amended]

3. In § 172.504 Table 2 is amended by adding the following entry immediately following "Class C explosives."

"Blasting agents . . . BLASTING AGENT"

4. § 172.524 EXPLOSIVES B placard is redesignated § 172.523; a new § 172.524 is added to read as follows:

§ 172.524 BLASTING AGENTS placard.

(a) Except for size and color, the BLASTING AGENTS placard must be as follows:



(b) In addition to meeting the requirements of this part, the BLASTING AGENTS placard must be orange with a 1/2-inch (12.7 mm) white outer border. The printing must be black.

5. Appendix B to Part 172 is amended by adding a new paragraph (c)(19) to read as follows:

Appendix B—Dimensional Specification for Placards

(c) * * *

(19) **BLASTING AGENTS** placard. The words **BLASTING AGENTS** must be across the center area of the placard and made with letters 1½ inches (47.6 mm) high with a ⅛- inch (7.9 mm) stroke.

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

6. The title to Subpart C is revised to read as follows:

Subpart C—Explosives and Blasting Agents; Definitions and Preparation

7. In § 173.2 paragraph (b)(2) is revised to read as follows:

§ 173.2 Classification of a material having more than one hazard as defined in this Part.

(b) * * *

(2) An explosive required to be classed and approved under § 173.86, or a blasting agent required to be classed and approved under § 173.114a.

8. In § 173.86 the Heading is revised to read as follows:

§ 173.86 New explosives definitions; approval and notification.

9. A new § 173.114a is added to read as follows:

§ 173.114a Blasting agents.

(a) *Definition of a blasting agent.* A blasting agent is a material designed for blasting which has been tested in accordance with paragraph (b) of this section and found to be so insensitive that there is very little probability of accidental initiation to explosion or of transition from deflagration to detonation.

(b) *Tests.* Except as provided in paragraph (c) of this section, no material may be offered for transportation described or classed as a blasting agent unless it passes the following tests:

(1) *Blasting cap sensitivity test.* (i) The container used for the blasting agent sample must be cylindrical, having a diameter of 3½ inches and a length of 6½ inches. The container must provide essentially no confinement.

(ii) The container must be filled with the sample. Solid materials must be packed to the same filling density as they will be packed in the shipping container. The temperature of the sample must be between 70° F. and 75° F. If it is difficult to achieve an appropriate filling density in the test container, e.g.,

auger packed products, it may be necessary to auger fill a special container for the test.

(iii) The filled container must be placed on a solid lead cylinder 4 inches long by 2 inches in diameter which must, in turn, be placed upright on a firm surface.

(iv) A commercial No. 8 fuse blasting cap or electric blasting cap must be inserted in the center of the top of the sample for the full length of the cap. A No. 8 commercial cap means a cap which contains 0.40–.45 grams of PETN base charge pressed into an aluminum shell with bottom thickness not to exceed 0.03 inch to a specific gravity of not less than 1.4 g/cc and primed with standard weights of primer, in accordance with the manufacturer's specifications.

(v) The blasting cap must be initiated from a safe position.

(vi) If the lead block is compressed ⅓-inch or more, the material is considered to have detonated.

(vii) The test must be conducted three times or until detonation occurs, whichever occurs first.

(viii) A material which detonates in any trial may not be classed as a blasting agent.

(2) *Differential thermal analysis test.*

(i) This test must be conducted using a standard, commercially produced, differential thermal analysis instrument or a laboratory constructed apparatus which gives comparable results.

(ii) The portion of the blasting agent tested must be representative of the complete mixture.

(iii) The test must be conducted three times. If the first exotherm exhibited by the material in any trial is less than 212° F. (100° C.), it may not be classed as a blasting agent.

(3) *Thermal stability test.* (i) At least 50 grams of the material must be placed in a loosely covered glass vessel and maintained at 167° F. (75° C.) for 48 consecutive hours.

(ii) A material which ignites or evidences decomposition by fumes, discoloration, or other characteristics may not be classed as a blasting agent.

(4) *Electrostatic sensitivity test.* (i) The apparatus must be designed so that an electrostatic spark can be caused to jump from a pointed electrode to a metal plate which also serves as a sample holder.

(ii) Ten milligrams of material must be used for each test. The portion of the blasting agent tested must be representative of the complete mixture.

(iii) If the test portion flames, smolders, or glows from the spark, the materials is considered to have ignited.

(iv) The test must be conducted three times or until ignition occurs, whichever occurs first.

(v) A material which ignites in any trial when exposed to a spark of 0.006 joules delivered from a 0.002 to 0.004 micro-farad capacitor may not be classed as a blasting agent.

(5) *Impact sensitivity test.* (i) Impact tests must be conducted in a Bureau of Explosives Impact Apparatus. (See § 173.53, Note 4.)

(ii) The tests must be run on ten milligram samples. The test portions must be representative of the complete mixture.

(iii) The drop height used in all trials must be ten inches.

(iv) The test must be conducted ten times or until an explosion occurs, whichever occurs first. An explosion is evidenced by flame or flame and noise. The production of smoke alone is not evidence of explosion.

(v) A material which explodes in any trial may not be classed as a blasting agent.

(6) *Fire test.* (i) The largest package [not to exceed 200 kg (440 lbs.)] of each type to be offered for transportation must be placed on incombustible supports and subjected to a fire.

(ii) The fuel used may be kerosene-soaked wood, flammable or combustible liquid, or flammable gas.

(iii) The fire shall be large enough to engulf the bottom of the package. The flames must reach at least halfway up on all sides.

(iv) The duration of the fire must be such as to cause the material in the package to burn or fume off completely, except for substances such as the oxides of aluminum or iron which are incombustible.

(v) Explosion is evidenced by a loud noise and the projection of fragments from the fire area.

(vi) Any material which explodes in this test may not be classed as a blasting agent.

(c) A material containing no ingredients, other than prilled ammonium nitrate and fuel oil, need only pass the test specified in (b)(1) of this section to be classed as a blasting agent. If a material classed as a blasting agent is offered for transportation under the test exception of this paragraph, it must be described as "ammonium nitrate-fuel oil mixture."

(d) *Notification and approval.* Except as provided in paragraphs (e) and (f) of this section, approval by the Associate Director for Operations and Enforcement (OE) is required for materials classed as blasting agents produced by a person who:

(1) Has not previously produced that blasting agent; or

(2) Has previously produced the blasting agent but has made a change in the formulation, process, or components.

A blasting agent is not required to be approved by the Associate Director for OE if an agency listed in paragraph (d)(3) of this section has determined and confirmed in writing to the Associate Director for OE that there are no significant differences in hazard characteristics relative to a blasting agent previously approved by the Associate Director for OE.

(3) No blasting agent may be approved for transportation unless it has been examined and tentatively classed by one of the following agencies according to the tests prescribed in this section.

(i) Bureau of Explosives (B of E);
(ii) U.S. Department of Energy (DOE) for blasting agents made by, or under the direction or supervision of DOE; or
(iii) U.S. Army Materiel Development and Readiness Command (DRCSF), Naval Sea Systems Command (NAVSEA 04H), or HQUSAF (IGD/SEV) for blasting agents made by or under the direction of the DOD.

(4) Except as otherwise provided in this section, each person who offers a blasting agent for transportation must submit a copy of the tentative class accompanied by a supporting laboratory report or equivalent data to, and receive a written approval from, the Associate Director for OE prior to offering the blasting agent for transportation.

(e) For each mixture of a blasting agent containing only prilled ammonium nitrate and fuel oil classed in accordance with paragraph (c) of this section, a copy of the test report on which the class is based must be filed with the Associate Director of OE before the material is offered for transportation and a copy of the report retained as long as that formulation is in use. As a minimum, the test report must contain the name and address of the person or organization conducting the test, date of test, quantitative composition of the mixture, including prill size and porosity, and a description of test results.

(f) Samples of materials designed for blasting not previously approved may be offered for transportation to a testing facility for examination if:

(1) The material has been assigned a tentative description and class in writing by one of the agencies listed in paragraph (d)(3) of this section.

(2) The material is packaged as required by this part according to the tentative description and class assigned.

(3) The package is labeled as required by this subchapter and the following is marked on the package:

(i) The words "SAMPLE FOR LABORATORY EXAMINATION";

(ii) The net weight of material; and
(iii) The tentative shipping description.

(g) A material designed for blasting that has not been examined or approved may be transported from where it was produced to an explosive testing facility under the following conditions:

(1) The material is not a forbidden explosive or an initiating explosive according to this subchapter;

(2) The material must be described as high explosive or high explosive, liquid, as appropriate and packed, marked, labeled, and described on the shipping paper as required by this subchapter;

(3) The material is transported in a motor vehicle operated by the owner of the material; and

(4) The shipment is accompanied by a person, in addition to the driver of the motor vehicle, who is qualified by training and experience to handle the blasting material.

(h) *Packaging for blasting agents.* Each package of blasting agent when prepared for shipment must comply with the applicable requirements of § 173.24 and withstand one of the following tests:

(1) Rigid packages (e.g., boxes and drums), prepared as for shipment, must be capable of withstanding a four-foot drop onto solid concrete so as to strike the most vulnerable point on the package without rupture or any loss of contents.

(2) Non-rigid packages (e.g., tubes and bags), prepared as for shipment, must be capable of withstanding three four-foot drops onto solid concrete without rupture or any loss of contents.

(3) Blasting agents may not be transported in portable tanks, cargo tanks, or tank cars except in accordance with the terms of specific exemptions issued by the Office of Hazardous Materials Regulation.

(i) See §§ 174.83, 176.83 and 177.848 of this subchapter for loading requirements.

(j) Notwithstanding the requirements of this section, materials properly described as nitrocarbonitrate on August 14, 1979, and offered for transportation and transported as nitrocarbonitrate in accordance with the

requirements of this subchapter in effect on that date, may continue to be offered and transported in compliance with those requirements until December 31, 1980.

§ 173.151 [Amended]

10. In § 173.151 the words "nitro carbo nitrate" are deleted from the fourth line.

§ 173.182 [Amended]

1. In § 173.182 paragraph (a) is amended by deleting "nitro carbo nitrate (see Note 1)" in the fourth and fifth lines from the end of the paragraph; Note 1 and paragraph (c) are deleted.

PART 174—CARRIAGE BY RAIL

12. In § 174.81 paragraph (a) the Table is amended by adding "Blasting agent" as the first entry under "OTHER HAZARDOUS MATERIALS" in the vertical column and between "Fireworks, common" and "Flammable liquids or flammable gases; * * *" in the horizontal column. The "Blasting agent" entry is designated No. 10 with the subsequent entries redesignated with appropriate consecutive numberings in both columns. An "X" is placed at the intersection of those columns headed, "Blasting Agent," "Initiating and primary explosives * * *," and "Fireworks, special or railway torpedoes." Footnote e following the table is amended by striking the work "nitrocarbonitrate" in the first line and replacing it with "blasting agent, ammonium nitrate-fuel oil mixture".

PART 175—CARRIAGE BY AIRCRAFT

13. In § 175.78, the present text is designated paragraph (a); paragraph (b) is added to read as follows:

§ 175.78 Stowage compatibility of cargo.

* * * * *
(b) No person may stow a package labeled BLASTING AGENT on an aircraft next to, or in a position that will allow contact with a package of special fireworks or railway torpedoes.

14. In § 175.320 paragraph (a), the Table is amended by revising the following entries:

§ 175.320 Cargo-only aircraft; only means of transportation.

(a) * * *

Material description	Class	Conditions
Gasoline	Flammable liquid	Permitted in metal drums having rated capacities of 55 gal. or less. May not be transported in the same aircraft with materials classed as class A, B, or C explosives, blasting agents, corrosive materials or oxidizing materials. Permitted in installed tanks each having a capacity of more than 110 gal. Subject to the conditions specified in para. (c) of this section.
High explosives	Class A explosives	Limited to explosives to be used for blasting. Permitted only when no other cargo is aboard the aircraft or when being transported in the same aircraft with an authorized shipment of any 1 or more of the following materials to be used for blasting: Ammonium nitrate-fuel oil mixtures, Blasting agent, n.o.s. Cordeau detonant fuse. Propellant explosive (solid) class B (water gels only). Propellant explosive (liquid) class B (water gels only).
Oil n.o.s.; petroleum oil or petroleum oil, n.o.s.	Flammable liquid	Permitted in metal drums having rated capacities of 55 gal. or less. May not be transported in the same aircraft with materials classed as class A, B, or C explosives, blasting agents, corrosive materials, or oxidizing materials. Permitted in installed tanks each having a capacity of more than 110 gal. subject to the conditions specified in para. (c) of this section.

PART 176—CARRIAGE BY VESSEL

§ 176.83 [Amended]

15. In § 176.83 paragraph (a), Table I is amended by adding a new subheading "Blasting Agents" in the vertical column following the entry "Fireworks, common, * * *". Two new entries numbered 17 and 18 are added to the vertical column under the new subheading "Blasting Agents" and to the horizontal column following the entry "Fireworks, common, * * *" as follows: "17. Blasting agent, nos" and "18. Ammonium nitrate-fuel oil mixtures". An "X" is placed at the intersection of those columns numbered 3 and 10, with those columns numbered 17 and 18.

Table II is amended by changing the third line to read: "EXPLOSIVE C; BLASTING AGENTS".

16. The Subpart J Heading is revised to read as follows:

Subpart J—Detailed Requirements for Flammable Solids, Oxidizers, Organic Peroxides, and Blasting Agents

§ 176.400 [Amended]

17. In § 176.400 the Heading and paragraphs (a) and (b) are amended by adding the words "blasting agents," preceding the word "oxidizer".

18. In § 176.410 the Heading and paragraph (a)(1) are revised; the introductory text of paragraphs (c), (d), and (e) and paragraph (e)(1) are amended by deleting the words "nitro carbo nitrate" and adding "blasting agents" in place thereof:

§ 176.410 Blasting agents, ammonium nitrate, and ammonium nitrate-mixtures.

(a) * * *

(1) Blasting agents and ammonium nitrate-fuel oil mixtures.

19. In § 176.415 the Heading is revised; paragraphs(a)(2), (b)(6), (c)(1), (c)(2), and

(c)(5) are amended by deleting "nitro carbo nitrate" and inserting "blasting agents or ammonium nitrate-fuel oil mixtures" in place thereof:

§ 176.415 Permit requirements for blasting agents, ammonium nitrates, and certain ammonium nitrate mixtures.

PART 177—CARRIAGE BY PUBLIC HIGHWAY

19. In § 177.848 paragraph (a) the loading and storage chart is amended by adding "Blasting agent" as the first entry under "OTHER HAZARDOUS

MATERIALS" in the vertical column and between "Fireworks, common" and "Flammable liquids or flammable gases; * * *" in the horizontal column. The Blasting agent entry is designated No. 10, with the subsequent entries redesignated with appropriate consecutive numberings in both columns. An "X" is placed at the intersection of those columns headed, "Blasting agent," "Initiating and primary explosives * * *" and "Fireworks, special or railway torpedoes." Footnote e following the table is amended by striking the words "nitro carbo nitrate" in the first line and replacing it with "blasting agent, ammonium nitrate-fuel oil mixture."

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53. and App. A to Part 1)

Note—The Materials Transportation Bureau has determined that this final rule will not result in a major economic impact under the terms of Executive Order 12044 and DOT implementing procedures (44 FR 11034). A regulatory evaluation is available in the docket.

Issued in Washington, D.C., on May 21, 1979.

L. D. Santman,

Director, Materials Transportation Bureau.

[FR Doc. 79-1941 Filed 5-30-79; 6:45 am]